US-PAT-NO: RE37757

DOCUMENT-IDENTIFIER: US RE37757 E

TITLE: Method and apparatus for optimal hand-offs in a satellite cellular communication system

DATE-ISSUED: June 18, 2002

INVENTOR-INFORMATION:

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US-CL-CURRENT: 455/428, 370/316 , 370/331 , 455/427 , 455/436 , 455/443

ABSTRACT:

A subscriber unit (26) communicates with a satellite communication system (10) that projects cells. The satellites (12) and cells move relative to the earth. During every other TDMA frame, a subscriber unit (26) measures the signal strength of all candidate hand-off beams. The signal strength of the current beam is compared to the signal strength of the candidate hand-off beams. When the signal strength of the current beam is not the strongest, a counter is incremented (108). A hand-off is requested to the beam with the

greatest signal level when the counter exceeds a predetermined threshold.
Accordingly, only after the current antenna beam has not been the strongest
beam for a certain period of time, is a hand-off requested. A different
counter threshold is used for candidate hand-off beams from other satellites
(12).

28 Claims, 7 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

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Detailed Description Text - DETX (30):
As indicated by hand-off points 82, 83, 84 and 85, hand-off decisions are
delayed in order to minimize the number of hand-offs that might occur. This is
necessary in a terrestrial systems to prevent hand-offs back and forth between
two cells in which a mobile subscriber may be moving along the boundary of the
two cells. Unnecessary hand-offs tie up system resources including
communication channels, and increase the risk of a dropped call. Another
reason that the hand-off decision can be delayed in terrestrial systems is that
a mobile subscriber travels relatively slowly with respect to cell boundaries
and the system can afford to wait until making a hand-off decision. Although
the time scale of the graph of FIG. 5 is shown in seconds, in terrestrial
systems, the time scale is more on the order of minutes.